

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte Villanueva et al.

Appeal No. _____

Appellants: Roel Domingo Villanueva et al.
Serial No.: 10/747,835
Filed: December 29, 2003
Group Art Unit: 1733
Examiner: Geoffrey L. Knable
Title: PNEUMATIC AVIATION TIRE
Confirmation No.: 6184
Attorney Docket: GTRC-218 (Previously GYTR-18)

Cincinnati, OH 45202

November 8, 2006

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

AMENDED BRIEF ON APPEAL

I hereby certify that this correspondence for Application No. 10/747,835 is being electronically transmitted to Technology Center 1733 via EFS-WEB, on November 8, 2006.

/William R. Allen/
William R. Allen, Reg. No. 48,389

November 8, 2006
Date

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AMENDED BRIEF ON APPEAL

I. Real Party in Interest

The real party in interest is The Goodyear Tire & Rubber Co., of Akron, Ohio,
which is the assignee of the present invention.

II. Related Appeals and Interferences

There are no related appeals or interferences known to Appellants or Appellants'
legal representative that will directly effect or be directly affected by or have a bearing on the
decision of the Board in the present appeal.

III. Status of the Claims

Claims 1, 3-8, 13-14, and 16 are rejected and claims 2, 9-12, 15, and 17-19 have been cancelled. Claims 1, 3-8, 13-14 and 16 are now on appeal.

IV. Status of Amendments

Appellant filed an amendment on May 9, 2006, which is subsequent to final rejection in the February 8, 2006 Office Action. The May 9, 2006 amendment was acted upon and entered by the Examiner.

V. Summary of Claimed Subject Matter

Appellants' independent claim 1 is directed to a pneumatic tire. *See* Appellants' Specification at page 6, line 3. The pneumatic tire (10) comprises a carcass (12). *Id.* at page 6, line 4. The pneumatic tire (10) also comprises a tread (14) disposed radially outward of said carcass (12) and including an equatorial plane. *Id.* at page 6, lines 4-9. *See also* FIG. 2. The pneumatic tire (10) also comprises a belt reinforcing structure (20) positioned radially between the carcass (12) and the tread (14). *Id.* at page 6, lines 9-13. The belt reinforcing structure (20) includes a plurality of cut belts (22, 24, 26, 28, 30, 32) extending axially into the shoulder (18). *Id.* at page 6, line 11 and page 7, lines 3-8. The belt reinforcing structure (20) also includes a plurality of overlapping spiral wound belt layers (34, 36) positioned radially between the plurality of cut belts (22, 24, 26, 28, 30, 32) and the tread (14). *Id.* at page 6, lines 11-13. The belt reinforcing structure (20) further includes a plurality of spiral wound shoulder layers (42, 44, 46, 48, 50, 52) overlapping at least a portion of the plurality of cut belts (22, 24, 26, 28, 30, 32) in the

shoulder (18). Id. at page 7, lines 9-10. *See also* FIG. 2. The plurality of spiral wound belt layers (34, 36) and the plurality of spiral wound shoulder layers (42, 44, 46, 48, 50, 52) are formed by a continuous cord-reinforced strip (38) having a strip width. Id. at page 6, lines 15-24. The plurality of spiral wound belt layers (34, 36) are characterized by a first winding pitch of greater than or equal to one strip width per revolution. Id. at page 7, line 22 to page 8, line 13. The plurality of spiral wound shoulder layers (42, 44, 46, 48, 50, 52) are characterized by a second winding pitch of less than one strip width per revolution. Id.

Appellants' independent claim 13 is directed to a method of reinforcing first and second shoulders of a pneumatic tire. Id. at page 3, 14-16. The method includes the step of applying a plurality of cut belt layers (22, 24, 26, 28, 30, 32) to a carcass (12). Id. at page 7, lines 3-5. The method also includes the step of winding a cord-reinforced strip (38) circumferentially around the plurality of cut belt layers (22, 24, 26, 28, 30, 32) with a first winding pitch in an axial direction greater than or equal to one strip width to form a first spiral wound belt layer (34, 36) extending from the second shoulder (18) to the first shoulder (18). Id. at page 6, line 15, to page 7, line 2. The method also includes the step of winding the cord-reinforced strip (38) with a second winding pitch in the axial direction less than one strip width proximate the first shoulder (18) of the tire (10) for applying a first plurality of overlapping spiral wound shoulder layers (42, 44, 46, 48, 50, 52) at the first shoulder (18) having a partially overlapping relationship with a first lateral free edge of the cut belt layers (22, 24, 26, 28, 30, 32). Id. at page 7, lines 9-21. The method further includes the step of winding the cord-reinforced strip (38) circumferentially about the first spiral wound belt layer (34, 36) at the first winding pitch to form a second spiral wound belt layer (34, 36) extending from the first shoulder (18) to

the second shoulder (18). *Id.* at page 7, line 22 to page 8, line 13. The method also includes winding the cord-reinforced strip (38) with the second winding pitch proximate in the second shoulder (18) of the tire for applying a second plurality of overlapping spiral wound shoulder layers (42, 44, 46, 48, 50, 52) having a partially overlapping relationship with a second lateral free edge of the cut belt layers (22, 24, 26, 28, 30 32).

VI. Grounds of Rejection to be Reviewed on Appeal

1. Claims 1, 3-5, 8, 13, 14 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,115,853 to Oare et al. (hereinafter *Oare*) in view of U.S. Patent No. 5,795,417 to Damke et al. (hereinafter *Damke*), further in view of U.S. Patent No. 5,007,974 to Maathuis (hereinafter *Maathuis*).

2. Claims 6 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Oare* taken in view of *Damke* and *Maathuis* as applied above and further in view of at least one of U.S. Patent No. 5,277,236 to Takatsu et al. (hereinafter *Takatsu*) or U.S. Patent No. 5,385,190 to Assaad et al (hereinafter *Assaad*).

VII. Argument

Appellants respectfully submit that the Examiner's rejection of claims 1, 3-5, 8, 13, 14, and 16 is not supported on the record, and that the rejection should be reversed.

- A. Claims 1, 3-5, 13, 14, and 16 were improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over *Oare* in view of *Damke*, further in view of *Maathuis*.

Appellants respectfully submit that the Examiner's obviousness rejection of claims 1, 3-5, 8, 13, 14 and 16 over *Oare* in view of *Damke* and further in view of *Maathuis* is not supported on the record, and that the rejection should be reversed. A prima facie showing of obviousness requires that the Examiner establish that the differences between a claimed invention and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." 35 U.S.C. §103(a). Such a showing requires that all claimed features be disclosed or suggested by the prior art. Such a showing also requires objective evidence of the suggestion, teaching or motivation to combine or modify prior art references, as "[c]ombining prior art references without evidence of such a suggestion, teaching or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability -- the essence of hindsight." In re Dembiczak, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

Appellants respectfully submit that, in the instant case, the Examiner has failed to establish a prima facie case of obviousness as to any of the pending claims, and as such, the rejections should be reversed. Appellants will hereinafter address the various claims that are the subject of the Examiner's rejections in order.

Independent Claim 1

Appellants submit that the February 8, 2006 Office Action fails to set forth a legitimate motivation for combining the disclosures of *Oare* and *Damke*. The February 8, 2006

Office Action admits that *Oare* fails to disclose the relationship of the belt and overlay layers to the tire shoulders. The February 8, 2006 Office Action relies on the disclosure in *Damke* as exemplifying that a person having ordinary skill in the art would understand that, as stated on page 3 of the February 8, 2006 Office Action, “a tire overlay typically extends and covers the ‘shoulder regions’ of a tire.” The February 8, 2006 Office Action refers to col.4, lines 4-12 and column 5, lines 15-21 in *Damke* to support this reliance. However, the Examiner’s reliance on the disclosure from *Damke* is misplaced for the following reasons.

Damke discloses two embodiments with spiral wound strips in the shoulder regions. Specifically and with regard to Figure 37, *Damke* discloses, at column 8, line 58 to column 9, line 6, an embodiment in which the cover ply (5) includes helically wound strips (19, 20) in the shoulder regions (18) that the Examiner concludes are spiral wound shoulder layers. Disposed between the shoulder regions (18) is a broad band (22). Consequently, this disclosure in *Damke* teaches a person having ordinary skill in the art that, if spiral wound shoulder layers were added to the tire construction of *Oare*, then a broad band (22) should be provided between the shoulder regions, rather than a continuous strip that is helically wound between the shoulders of *Oare*, and that the wrapped helically wound strips (19, 20) should only be applied in the shoulder regions.

With regard to Figure 38, *Damke* discloses, at column 9, lines 7-48, an embodiment in which the cover ply (5) includes a helically wound strip (19, 20) in the shoulder regions (18), which the Examiner identifies as spiral wound shoulder layers, and a different helically wound strip (23) between the shoulder regions (18). Strips (19, 20) have different properties than strip (23). Specifically, strips (19, 20) have a maximum extension of 0.1% to

0.5% and strip (23) has a maximum extension of 2% to 3%. In addition, the cords in strips (19, 20) are made of aramid and the cords in strip (23) are rayon. Consequently, this disclosure in *Damke* teaches a person having ordinary skill in the art that, if spiral wound shoulder layers were added to the tire construction of *Oare*, then a different strip (23) should be provided between the shoulder regions than the strips (19, 20) in the shoulder regions (18), rather than a continuous strip that is helically wound between the shoulders of *Oare*. This discontinuity is required such that the strips (19, 20) can have different properties than strip (23), as outlined in the preceding remarks.

Oare discloses that the overlay structure (20), which is disposed between the shoulder regions, comprises “a single continuous ribbon 22.” See *Oare* at column 2, line 2 – column 3, line 4. Based upon these teachings from *Damke*, Appellants submit that the Examiner’s suggested modifications to *Oare* would change the principle of operation of the tire construction being modified. Under MPEP § 2141.03, this is not permitted. Consequently, Appellants submit that the Examiner has failed to properly support a case of *prima facie* obviousness. For at least this reason, Appellants request that the rejection of independent claim 1 be reversed.

The rejection of Appellants’ claim 1 should be reversed for additional reasons. Specifically, Appellants submit that the February 8, 2006 Office Action fails to set forth a legitimate motivation for combining the disclosure of *Maathuis* with the disclosures of *Oare* and *Damke*. Specifically, *Maathuis* discloses that a continuous strip may be wound in multiple layers between the shoulder regions. However, *Maathuis* fails to disclose or suggest that the continuous strip, if extended by winding into the shoulder region, can supply multiple spiral wound shoulder

layers. Consequently, even if *Damke* were properly applied to modify *Oare*, a person having ordinary skill in the art would fail to recognize from the disclosure in *Maathuis* that multiple spiral wound layers would be desirable in the shoulder regions of a tire construction.

Maathuis teaches that, in a tire construction that includes multiple layers of a spiral wound strip, the winding pattern is selected such that the ends (24, 25) of the strip (22) are both positioned near the equatorial plane (EP). Note that the winding pattern has a near mirror symmetry about the EP, as best shown in Figure 4 of *Maathuis*. For example, the center turn of strip (22) is nearly flat to initiate the winding at end (24). Consecutive turns in the first layer to the axial left of the EP overlap with the turn of strip (22) furthestmost from the EP partially overlying the adjacent turn of the strip (22) nearer to the EP. Consecutive turns of strip (22) in the first layer to the axial right of the EP also overlap with the turn of strip (22) furthestmost from the EP partially overlying the adjacent turn of strip (22) nearer to the EP. Hence, a person having ordinary skill in the art would understand that the winding pattern in *Maathuis* that provides the nearly symmetrical winding pattern with multiple layers of continuous strip (22) and overlapped turns (26, 27, 28) at the lateral edges relies on initiating and concluding the winding of the strip (22) near the EP.

In marked contrast, the winding pattern in *Oare*, which the Examiner attempts to improperly modify in view of *Damke*, is asymmetrical about the equatorial plane because the strip (37) is wound from one lateral end (38) to the opposite lateral end (39). With regard to *Oare* and particularly Figure 3 in *Oare*, the first helical turn of strip (37) at lateral end (38) is almost flat to initiate the winding and does not overlap with any adjacent turn. The last helical turn of strip (37) at lateral end (39), which concludes the winding pattern in *Oare*, has five

distinct tiered levels because of the overlap between adjacent helical turns.

The Examiner's proposed modification, based upon *Maathuis*, to the tire construction taught by the combination of *Oare* and *Damke* would present a person having ordinary skill with the dilemma of reconciling the asymmetrical winding pattern in *Oare* with the symmetrical winding pattern in *Maathuis*. Somehow, a person having ordinary skill in the art would have to initiate and conclude the winding of the strip near the EP, as taught by *Maathuis* to provide multiple levels, and still retain the asymmetrical winding pattern of *Oare* that is initiated and concluded at the lateral edges most remote from the EP. Appellants submit that the Examiner is improperly relying on hindsight analysis based upon the Appellants' specification, which is fundamentally impermissible. *See* MPEP § 2141.

It follows that the Examiner's attempted rebuttal in the Advisory Action is without merit. As a rebuttal position, the Examiner states:

Put simply, normal tire belts extend into the shoulder and it is not unobvious to provide the belts in *Oare* to so extend, it being submitted that no evidence or convincing line of argument has been presented that would establish that the artisan would have read these depictions as suggesting that the belt/overlay edges be placed at other than typical locations.

On column 3, lines 4-9, *Oare* teaches that, in a most preferable embodiment, the width of the overlap is greater in the axially outer portions than the width of the overlap in the center portion. The embodiment depicted in FIG. 3 of *Oare* has the width of the overlay structure 36 thicker at the axially outer portions of the tread 42 than the center of the tread 42. If such a trend were to continue by extending the overlay structure 36 into the shoulder areas of the tire 30, as suggested by the Examiner, the thickness of the overlay structure 36 would surpass the thickness of the

shoulder areas. Such a design would render the tire 30 inoperable for its intended purpose, which is not permitted. Accordingly, the only suggestion in the *Oare* reference is to increase the thickness of the overlay structure 36 traveling axially outward from the center of the tread 42 and this suggestion teaches away from extending the overlay structure 36 into the shoulder of the tire 30. Therefore, the Examiner's rebuttal argument lacks merit.

Because the Examiner has failed to properly support a case of *prima facie* obviousness for at least these additional reasons, Appellants request that the rejection of independent claim 1 be reversed.

Dependent Claims 3-5 and 8

Claims 3-5 and 8, which depend from claim 1, are not argued separately.

Independent Claim 13

The rejection of independent claim 13 should be reversed for at least similar reasons as independent claim 1, as discussed above. Specifically, the Examiner has failed to support *prima facie* obviousness of claim 13 because of an absence of a proper suggestion or motivation to combine *Oare*, *Damke* and *Maathuis* in the suggested manner.

Dependent Claims 14 and 16

Claims 14 and 16, which depend from independent claim 13, are not argued separately.

- B. Claims 6 and 7 were improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over *Oare* in view of *Damke* and further in view of *Maathuis* and *Takatsu* or *Assaad*.

Appellants respectfully submit that the Examiner's obviousness rejection of claims 6 and 7 over *Oare* in view of *Damke* and further in view of *Maathuis* and *Takatsu* or *Assaad* is not supported on the record, and that the rejection should be reversed. Specifically, Appellants submit that claims 6 and 7 are patentable for at least the same reasons as independent claim 1 from which they depend. In this regard, neither *Takatsu* nor *Assaad* cures the deficiencies of *Oare*, *Damke* and *Maathuis*, as fully discussed in the preceding remarks. Furthermore, each of these claims recites a unique combination of elements not taught, disclosed or suggested by the combined disclosures of *Oare*, *Damke*, *Maathuis* and either *Takatsu* or *Assaad*.

VII. Conclusion

In conclusion, Appellants respectfully request that the Board reverse the Examiner's rejections of claims 1, 3-8, 13, 14 and 16 and that the application be passed to issue. If there are any questions regarding the foregoing, please contact the undersigned at 513/241-2324. Moreover, if any other charges or credits are necessary to complete this communication, please apply them to Deposit Account 07-1725.

Respectfully submitted,
WOOD, HERRON & EVANS, L.L.P.

Date: November 8, 2006

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APPENDIX OF CLAIMS

1. (Previously Presented) A pneumatic tire comprising:
 - a carcass;
 - a tread disposed radially outward of said carcass, said tread including an equatorial plane;
 - a sidewall including a shoulder that intersects said tread; and
 - a belt reinforcing structure positioned radially between said carcass and said tread, the belt reinforcing structure including a plurality of cut belts extending axially into said shoulder, a plurality of overlapping spiral wound belt layers positioned radially between said plurality of cut belts and said tread, and a plurality of spiral wound shoulder layers overlapping at least a portion of said plurality of cut belts in said shoulder, said plurality of spiral wound belt layers and said plurality of spiral wound shoulder layers formed by a continuous cord-reinforced strip having a strip width, said plurality of spiral wound belt layers characterized by a first winding pitch of greater than or equal to one strip width per revolution, and said plurality of spiral wound shoulder layers characterized by a second winding pitch of less than one strip width per revolution.
2. (Cancelled)
3. (Original) The pneumatic tire of claim 1 wherein said plurality of spiral wound shoulder layers includes four spiral wound shoulder layers.

4. (Original) The pneumatic tire of claim 3 wherein the second winding pitch is about 0.2 of a strip width per revolution.
5. (Original) The pneumatic tire of claim 1 wherein the second winding pitch is about 0.2 of a strip width per revolution.
6. (Previously presented) The pneumatic tire of claim 1 wherein said belt reinforcing structure includes six cut belt layers and two spiral wound belt.
7. (Original) The pneumatic tire of claim 6 wherein at least two of said spiral wound shoulder layers are applied with a second winding pitch of about zero.
8. (Previously presented) The pneumatic tire of claim 1 wherein said plurality of spiral wound belt layers and said plurality of spiral wound shoulder layers are wound with a zero degree spiral overlay.
- 9-12. (Cancelled)
13. (Previously Presented) A method of reinforcing first and second shoulders of a pneumatic tire, comprising:
 - applying a plurality of cut belt layers to a carcass;
 - winding a cord-reinforced strip circumferentially about the plurality of cut belt layers with

a first winding pitch in an axial direction greater than or equal to one strip width to form a first spiral wound belt layer extending from the second shoulder to the first shoulder;

winding the cord-reinforced strip with a second winding pitch in the axial direction less than one strip width proximate the first shoulder of the tire for applying a first plurality of overlapping spiral wound shoulder layers at in the first shoulder having a partially overlapping relationship with a first lateral free edge of said cut belt layers;

winding the cord-reinforced strip circumferentially about the first spiral wound belt layer at the first winding pitch to form a second spiral wound belt layer extending from the first shoulder to the second shoulder; and

winding the cord-reinforced strip with the second winding pitch proximate in the second shoulder of the tire for applying a second plurality of overlapping spiral wound shoulder layers having a partially overlapping relationship with a second lateral free edge of said cut belt layers.

14. (Original) The method of claim 13 wherein the second winding pitch is about 0.2 of a strip width per revolution.

15. (Cancelled)

16. (Previously presented) The method of claim 13 wherein said spiral wound belt layers and said plurality of spiral wound shoulder layers are wound with a zero degree spiral overlay.

17-19. (Cancelled)

APPENDIX OF EVIDENCE

(None)

APPENDIX OF RELATED PROCEEDINGS

(None)